

InLCA: Selected Papers

www.LCAccess – Global Directory of LCI Resources

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Abstract. LCAccess is a U.S. Environmental Protection Agency sponsored web-site intended to promote the use of Life Cycle Assessments in business decision-making by facilitating access to data sources useful in developing a life cycle inventory (LCI). While LCAccess will not itself contain data, it will be a searchable global directory to potential data sources. In addition to directing users to relevant data sources, LCAccess will also serve as central source for LCA information. Development is currently being completed on LCAccess with an expected operational date of winter 2000/2001 for some features of the web-site. The LCI Global Directory is expected to be fully functional by the summer of 2001. To find the LCAccess web-site in 2001 go to: www.epa.gov/LCAccess. LCAccess is currently soliciting organizations that have completed LCI/LCA studies to provide their data sources for reference in LCAccess. Inquiries should be directed to the development manager, Mr. Tim Skone (US 703/318-4745) and/or the EPA Sponsor, Ms. Mary Ann Curran (513/569-7782).

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1 Background

LCAccess is a U.S. Environmental Protection Agency (EPA) sponsored web-site dedicated to the promotion of life cycle assessment (LCA) to make more informed decisions through a better understanding of the human health and environmental impacts of products, processes, and activities. LCAccess accomplishes this goal by providing information on EPA's role in LCA, the benefits of LCA, what is LCA and an overview of how to conduct an LCA, how to find LCI data sources (LCI Global Directory), available LCA resources (i.e., documents, software tools, other related links), on-going efforts in the field of LCA (e.g., EPA, other US efforts, international efforts), and upcoming events.

2 Purpose

Specifically, LCAccess was created to address a critical need in the LCA community – where and how to locate existing Life Cycle Inventory (LCI) data. The lack of readily-available, quality LCI data is often a barrier to manufacturers, among others, for incorporating life cycle considerations into their decision making process. While much progress has been made on standardizing and improving the uniformity of the LCA methodology, less success has been achieved in increasing the availability of quality life cycle inventory data. Three specific areas of improvement exist to promote the use of LCA in decision-making by industry, government, and LCI practitioners.

1. Educate decision-makers about how to conduct an LCA and about the benefit thereof.
2. Increase awareness of existing LCI data sets and other surrogate data sources.
3. Provide direction on how and where to access these LCI data sources.

3 Implementation Plan

LCAccess is currently in Phase II of its development. The web-site will be available to the public at the beginning of 2001, with the exception of the Global LCI Directory, which will follow in the fall of 2001. The following describes each phase of the LCAccess implementation plan.

Phase I: Literature Review and Web-site Design

- Review of external data collection format activities.
- Identification of meta-data characteristics for an LCI Data Source Profile.
- Identification of potential LCI data sources available through the Internet.
- Design of LCAccess web-site and LCI Data Locator tool ('straw-man' only).
- Proposed R&D implementation plan.

Phase II: Data Compilation and Web-site Implementation

- Obtain further information on existing data sources.
- Promote the web-site.
- Contact organizations (consulting, academic, non-profit) that perform LCAs regarding availability of LCI data sources.
- Web page development.
- Create a web-enabled Oracle database.
- Launch the web page.

Phase III: Case Studies

- Research & integrate case studies on to the web-site.

Phase IV: Modification/Improvement of the Web-site and Data Maintenance

- Maintenance, modifications, and improvements to the web-site and data sources.

4 LCAccess Web-Site

The LCAccess web-site is divided into six primary areas to help educate people that are new to the concept of LCA while serving as a focal point for LCA practitioners and decision-makers to stay current with field of LCA. And most importantly, to promote the use of LCA to make more informed decisions by providing access to tools, publications, and EPA programs. Each of the six primary areas of the LCAccess web-site is described below.

5 Why LCA

This section of the web-site is designed to provide a broad overview of LCA to educate people new to the concept of LCA on "Why they would want to perform an LCA?" This section is presented in a report format starting with the history of LCA in the United States and how it can be used to make more informed decisions. This section also contains more detailed information on the following topics to introduce current trends in the application of LCA and the direction in which the development of LCA is evolving towards in the future.

- Streamlining LCA
- Interest in LCA Approaches is Growing Internationally
- LCA within Industry
- LCA within Government
- Future Direction in LCA Development
- LCA in Environmental Decision-Making

6 LCA 101

The LCA 101 section of the web-site provides an introductory overview LCA. The uses of and major components of LCA are discussed. This section differs from the 'Why LCA' section by providing a more detailed overview of how to organize and manage an LCA project. This section is also presented in report format using text that had been adapted from several recent US EPA projects, including applying LCA to facilitating remediation, treatment, and pollution prevention decisions. The following outlines the topics covered under the LCA 101 section.

Chapter 1: What is a Life Cycle Assessment

- Why Should You Conduct an LCA?
- Benefits of Conducting an LCA
- Limitations of Conducting an LCA

Chapter 2: Goal Definition and Scoping

- What is Goal Definition and Scoping?
- How Does Goal Definition and Scoping Effect the LCA Process?
- Getting Started

Chapter 3: Life Cycle Inventory

- Why Conduct an LCI?
- What Do the Results of the LCI Mean?
- Key Steps of a Life Cycle Inventory

Chapter 4: Life Cycle Impact Assessment

- What is a Life Cycle Impact Assessment?
- Why Conduct an LCIA?
- What do the Results of an LCIA Mean?
- Key Steps of a Life Cycle Impact Assessment

Chapter 5: Life Cycle Interpretation

- What is Life Cycle Interpretation?
- Life Cycle Interpretation is a Formal Process
- Can I Select an Alternative Based Only on the Results of the LCA?
- Key Steps to Interpreting the Results of Your LCA
- Reporting Your Results
- Conclusion

7 Data Sources (i.e., Global LCI Directory)

This section of the web-site provides a 'yellow pages' index to existing data sources through an on-line tool called the 'Global LCI Directory'. The Global LCI Directory is an International directory of existing LCI data sources and Other Sources of LCI data (i.e., not collected for the purpose of performing an LCI) that can be used to reduce the time and resources required to ob-

tain LCI data. The purpose of the Global LCI directory is to provide free of service to the public a searchable directory of LCI resources. LCI data sources contained within the tool were voluntarily submitted by data owners to help promote LCA. Both publicly available (free of charge) and data sources available at a cost are included in the directory. Please note that, no 'LCI data' is contained within the directory or available on the web-site, one must use the contact information provided to obtain the data. The following provides an overview of the Global LCI Directory.

The Global LCI Directory is comprised of 7 basic web pages (screens):

Screen 1: Global LCI Directory Home Page

Screen 2: Enter A Profile

Screen 3: Matrix Search

Screen 4: Keyword Search

Screen 5: Search Results

Screen 6: Completed LCI Data Profile

Screen 7: Other Sources of LCI Data Profile

The purpose, content, and functionality of each are provided below.

Screen 1: Global LCI Directory Home Page

The Global LCI Directory home page provides a brief overview of the tool's capabilities and links to direct the user either to conduct a search using the pre-defined matrix or to search the database using keywords and/or user-defined meta-data characteristics. The screen provides a link to additional information on the functionality of the tool.

Screen 2: Enter A Profile

This screen is accessible from the Global LCI Directory home page. It provides a LCI data profile template to be completed by users seeking to add a profile to the Global LCI Directory database. There is no cost to add a data profile to the directory. For an example of the LCI data profile (see Tables 1 and 2).

Screen 3: Matrix Search

The matrix search is designed to provide the user with an overview of the types of data sources contained in the database. The matrix search organizes the information contained in the Global LCI Directory by industry area and life cycle stage. To view the summary results for a specific industry area and life cycle stage, the user can click on the number in the matrix table corresponding to their request. The matrix search is designed for users who want to know what types of data are in the Global LCI Directory and/or are trying to identify a broad range of data sources.

Screen 4: Keyword Search

The keyword search allows the user to search by words or phrases, or define their own meta-data selection criteria.

Screen 5: Search Results

Search results are presented in the two tables: 1) Completed LCIs, and 2) Other Sources of LCI Data. For the Completed LCIs results table the following meta-data characteristics are utilized:

- Product or Process
- Geographical Area Covered
- Time Period Covered
- Cost

The meta-data characteristics included in the search results table for Other Sources of LCI Data include the following:

- Product or Process
- Geographical Area Covered
- Time Period Covered
- Raw Material Use
- Air Releases

- Water Releases
- Solid Waste Disposal
- Other
- Cost

The user can pick selected data sources to view the complete profiles by checking the box before 'Process or Product' or select all profiles to view.

Screen 6: Completed LCI Data Source Profile

Table 1 is an example of a completed LCI data source profile. After reviewing the profile, the user has the option to print the profile, view the next profile, or return to the search results table.

Table 1: Completed LCI data source profile (example only)

General Information	
Title:	Life Cycle Assessment Comparison of Arc Furnace and Blast Furnace for Steel-making
Source:	The American Institute of Steel Manufacturing
Researchers/Authors:	Acme LCA Institute, Smithtown, USA
Description:	The LCA study was funded by the Department of Energy and the American Institute of Steel Manufacturing. The summary results of the study are provided by life cycle stage. The LCA study was peer reviewed by the U.S. Environmental Protection Agency.
Access:	Public
Media Format:	Electronic: Microsoft Excel
Location:	This information can be downloaded from The American Institute of Steel Manufacturing web-site at the following address: www.aism.org/LCA/Furnace
Cost:	\$0
Applicability of Data Source	
Product or Process Covered:	Steel
Functional Unit	Per pound of hard steel, rolled
Level of Aggregation:	Industrial
Industry Covered:	Steel
Technology Covered:	Arc Furnace
Geographical Area Covered:	United States
Time Period Covered:	1999 to 2000
Functional Unit:	Per pound of steel.
Life Cycle Stages Covered:	Raw Material Acquisition, Manufacturing, Use/Reuse/Maintenance, and Recycle/Waste Disposal

Screen 7: Other Sources of LCI Data Profile

Table 2 is an example of a data source profile for an Other Source of LCI Data. After reviewing the profile, the user has the option to print the profile, view the next profile, or return to the search results table.

8 LCA Resources

This section of the web-site provides a list of publications, books, standards and links to other web-sites that contain additional information on both managing and conducting an LCA. While the list is not comprehensive, it serves as a starting point for researching LCA.

9 On-going Efforts

This section of the web-site provides a list of ongoing efforts in the field of LCA. The information provided is organized by

Table 2: Other source of LCI data – data source profile (example only)

General Information	
Title:	Iron and Steel Institute 1998 Annual Statistical Report
Source:	American Iron and Steel Institute (AISI)
Researchers/Authors:	Acme LCA Institute, Smithtown, USA
Description:	The statistical report is printed annually in July. The 130-page book provides comprehensive statistical data for the United States steel industry, plus a variety of selected statistical data on the Canadian and Mexican industries as well as the world steel industry. It is the second year that NAFTA charts are now being included as part of a series. The NAFTA charts, compiled from U.S. Department of Commerce, Bureau of the Census, Statistics Canada and Canacero data, show raw steel production, steel mill product shipments, and imports and exports. World production of pig iron and raw steel by countries is also displayed.
Accessibility:	Public
Media Format:	Electronic (CD-ROM)
Location:	This information can be obtained from the Statistical Department at AISI, 1101, 17 th Street, NW, Suite 1300, Washington, DC 20036-4700. Phone number for ordering is 202-452-1039
Cost:	\$90
Applicability of Data Source	
Product or Process Covered:	Steel-making; general
Level of Aggregation:	Industrial
Industry Covered:	Steel
Geographical Area Covered:	United States, Canada, Mexico
Time Period Covered:	1998
Data Collection Purpose:	Census of Iron and Steel Production
Life Cycle Stages Covered:	Manufacturing
Relevance as LCI Data:	Other

U.S. EPA Efforts, Other U.S. Efforts, and International Efforts. While the list is not comprehensive, it serves as a starting point for researching ongoing LCA efforts.

10 Upcoming Events

This section of the web-site provides a calendar of LCA related conferences, meetings, and activities. All organizations are welcome to announce/add their LCA-related events to the calendar.

11 How to Participate in LCAccess

All organizations wishing to improve the use of environmental data in business decision-making are encouraged to participate in LCAccess. As discussed previously, LCAccess is intended both, as a public source of information regarding LCAs and, specifically, as a directory of LCI data sources. As such, you can use LCAccess to identify sources of information that could be used for a study at your organization. You can also participate in LCAccess by providing summaries of relevant work done by your organization that can be used/accessed by other organizations to complete their own analyses. Your participation both as a consumer of information as well as a provider of data sources is key to the increased usability of LCAccess. With the continued support and contribution of data sources by your organization and others, LCAccess will grow to become an even more useful tool for facilitating the incorporation of environmental data in business decision-making.